Orthodontic malocclusion

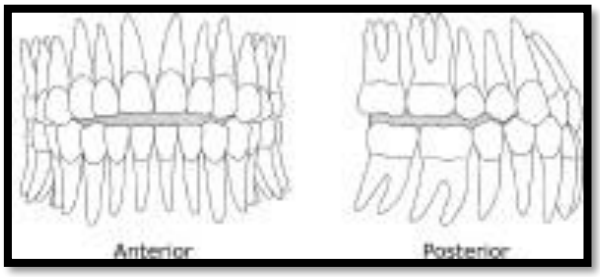
1. Open bite (Negative overbite):

Inherited, developmental or acquired malocclusion, whereby no vertical overlap exists between maxillary and mandibular anterior teeth (anterior open bite), or no vertical contact is exhibited between maxillary and mandibular posterior teeth (posterior open bite).

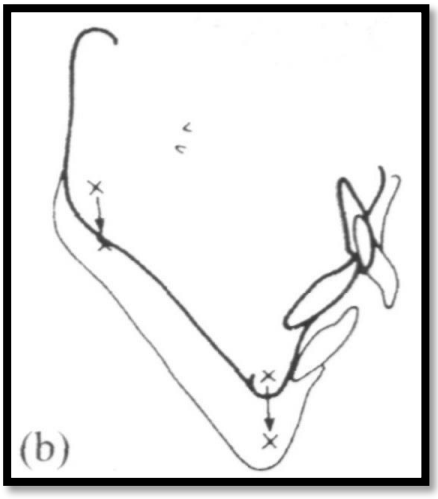
Subdivided to:

1- Dental open bite: A localized openbite that involves only a few teeth due to a digit-sucking habit or other local factors.

2- Skeletal open bite: Caused by divergence of the skeletal mandibular or / and maxillary planes leading to increased facial height as in case of posterior rotational growth of the mandible (Fig. b).



a-Anterior and posterior dental openbite

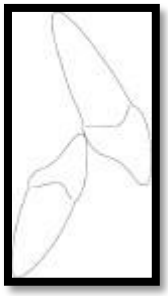


b-Posterior rotational growth of the mandible

2. Deep bite (Excessive overbite)

Type of malocclusion in which the vertical overlap of the anterior teeth is increased beyond the ideal relationship (more than the normal range which is 2-4 mm); it is frequently associated with decreased vertical facial dimensions, subdivided into;

1- None traumatic deepbite: In which the deepbite still associated with teeth–teeth relation.



2- Traumatic deepbite: in which the deepbite associated with the Impingement of the mandibular incisors in the mucosa palatal to the maxillary incisors commonly is seen in malocclusions with extremely deep bite as in sever Class II malocclusion.

3- Bi-traumatic deepbite: usually seen in some Class II, Division 2 malocclusions with minimal overjet, the retroclined maxillary incisors may impinge in the keratinized tissue labial to the mandibular incisors, causing gingival recession at the same time there is a trauma to palatal mucosa caused by lower incisors.

Buccal overjet:

The distance between the buccal surfaces of the maxillary posterior teeth and the buccal surfaces of their mandibular antagonists. An unofficial term sometimes used to indicate whether or not there is a tendency for a posterior crossbite.

3. Crossbite:

An abnormal relationship of one or more teeth to one or more teeth of the opposing arch, in the buccolingual or labiolingual direction. A crossbite can be dental or skeletal in etiology. [Note: The appropriate type of crossbite can be specified by identifying the teeth or jaws that deviate the most from their ideal position (e.g. when a crossbite is mainly due to a narrow maxillary arch the correct term is "maxillary posterior lingual crossbite" as opposed to "mandibular posterior buccal crossbite" which indicates wider mandibular arch).

Classification of crossbite:

Based on Location

1. ANTERIOR CROSS BITE:

- According to no. of teeth involved:
  A. Single tooth Cross bite. B. Segmental Cross bite.

2. POSTERIOR CROSS BITE:

- According to no. of teeth involved:
  A. Single tooth Cross bite. B. Segmental Cross bite.
- According to side involved:
  A. Unilateral. B. Bilateral.
- According to extent:
  A. Single posture Cross bite. B. Buccal Non-occlusion (Scissor bite).

C. Lingual Non-occlusion (Buccal crossbite).

Based on the Etiologic Factor

1. Skeletal crossbite.
2. Dental crossbite.
3. Functional crossbite.

Anterior crossbite: If the one or more of the lower incisors are in front of the upper incisors, the condition is called reverse overjet or anterior crossbite.

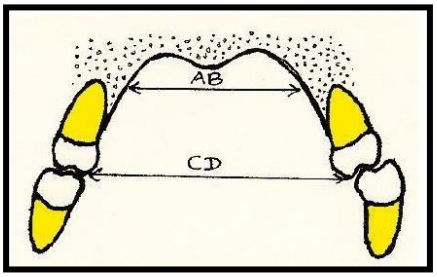


Posterior crossbite: A crossbite due to buccal displacement of the affected posterior tooth (or group of teeth) from its (their) ideal position relative to its (their) antagonist(s). Subdivided into:

1- Unilateral posterior: Affect only one side of the dental arch, and can be either:
a-True unilateral posterior crossbite: Caused by the asymmetry present in the dental arch and usually does not associated with deviation of the mandible.
b- False unilateral posterior crossbite: caused by narrowing of the maxilla or widening of the mandible leading to cusp –cusp relation then the patient tries to get maximum intercuspation by deviation of the mandible to one side leading to unilateral crossbite.

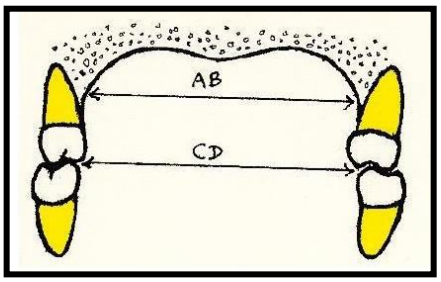
2- Bilateral posterior crossbite: Caused by sever maxillary collapse or/ and mandibular widening, there is no mandibular deviation during closure.

Skeletal crossbite: It is a crossbite with a skeletal basis (constricted maxilla and/or wide mandible).



Palatal arch width (AB) is inadequate and quiet less than dental arch width (CD)

Dental crossbite: It is caused by distortion of the dental arch where the jaws are of normal proportions.

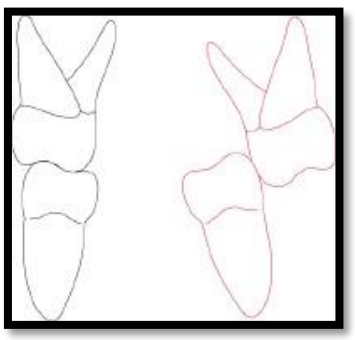


Palatal arch width (AB) is adequate and nearly equal to dental arch width (CD)

Functional crossbite (False): It is a crossbite due to a functional shift of the mandible, it should be treated early if recognized, because if uncorrected, true crossbite may result by modification of growth.

Scissors-bite:

Situation in which several adjacent posterior teeth overlap vertically in habitual occlusion with their antagonists, without contact of their occlusal surfaces. The deviation of the affected teeth from their ideal position could occur either in maxillary buccal or mandibular lingual direction, where mandibular dentition are completely contained within the maxillary dentition in habitual occlusion.



4. Spacing of the dentition

A dental arch with spacing of more than accepted range(2 mm or more), it is either:

a- Localized: Localized in one position like median Diasthema that caused by abnormal frenal attachment.

b- Generalized: Affect the whole dental arch mostly caused by abnormal soft tissue function like tongue thrust.

5. Crowding of the dentition

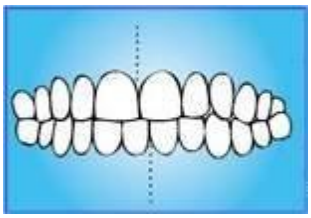
A dental arch with crowding of more than accepted rang (2 mm or more), either caused by local factor like early extraction of deciduous teeth or general factor like collapsed maxillary arch that lead to crowding of the whole arch.

Imbrication: The overlapping of incisors and canines in the same arch, usually due to crowding.

Midline shift (deviation): Occurs when the upper and lower dental midline are not coinciding, and subdivided into:

1- Associated with mandibular deviation during closure as in case of premature occlusal contact.

2- Not associated with mandibular deviation during closure as in case of unilateral missing of the teeth or crowding.



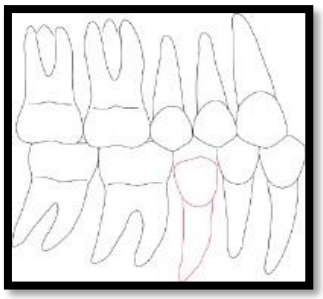
Midline shift may be due to shift of upper or lower teeth or some time may both of them and it is very important to determine that during diagnosis and treatment planning specially to choose a tooth or teeth to be extracted, in addition to that it is important to differentiate between midline shift of the dentition and the face because we may see one of them or some time both of them.

Midline shift of the face mostly caused by abnormal skeletal factor (like unilateral hyperplasia of the mandible) or deviation of the nose.

Midline shift of the dentition mostly associated with unilateral extraction or congenital missing or impaction of a tooth.

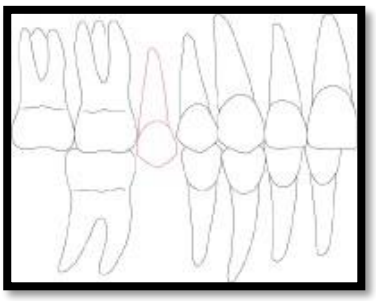
6. Infraposition (Infraocclusion):

A situation in which a tooth or group of teeth is positioned below the occlusal plane; commonly due to a deleterious habit or to ankylosis.



7. Overeruption (Supraeruption, Supraposition, Supraocclusion):

The situation whereby an unopposed or non-occluding tooth extends beyond the occlusal plane.



8. Dental retrusion:

Posterior position of a tooth or group of teeth but keeping their long axis with normal inclination.

9. Dental retroclination:

Posterior positioning of a tooth or group of teeth but their long axis are tipped labio-lingually.

[Note: A tooth can be retrusive without being retroclined, if it is positioned too far posteriorly but has a normal inclination.]

10. Dental proclination:

Anterior positioning of a tooth or group of teeth but their long axis are tipped labially.

11. Dental protrusion:

Anterior positioning of a tooth or group of teeth but keeping their long axis with normal inclination.

12. Impaction of teeth:

Occurs when eruption is completely blocked by other teeth due to crowding, it tends to affect the last teeth to erupt in each segment (as in case of canine).

13. Rotation of teeth:

A type of malocclusion in which there is a rotation of a tooth about its long axis, most evident when viewing the tooth from an occlusal perspective mostly, caused by crowding and sub divided into:

1- Mild (less than 90°): Can be treated easily by removable orthodontic appliance using couple force system.
2- Sever (more than 90°): Must be treated by Fixed orthodontic appliance only

14. Displacement of tooth:

Abnormal position of the tooth (crown and root) in the dental arch

15. Overlapping of teeth:

Abnormal position of the crown of the tooth in the dental arch while there is normal position of root in the jaw.